

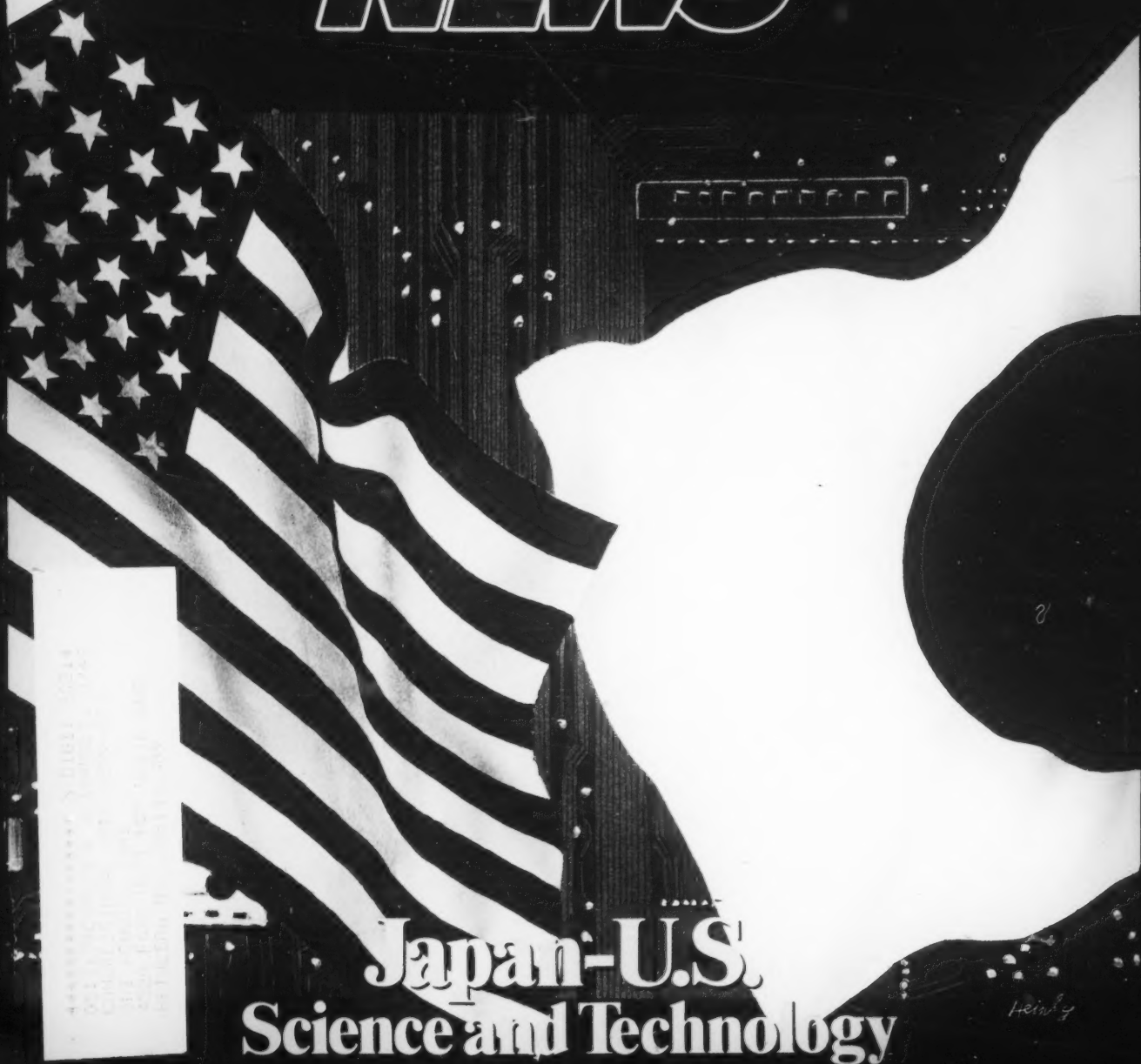
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NOVEMBER 5, 1990

CHEMICAL & ENGINEERING

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Chemical & Engineering News

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LETTERS

CHEMICAL SAFETY

A carbodiimide eye irritant

An undescribed aspect of a well-known hazard can sometimes be as harmful as the hazard itself. Such was the case recently for the chemical diisopropylcarbodiimide, an activating agent used in amino acid coupling reactions.

The accident occurred when a 1-L bottle of the above liquid broke in a shipping department. Donned with respirators, lab coats, and impervious gloves, a fellow worker and I volunteered to clean up the liquid spill from a desk and surrounding floor area. The total cleanup took 45 minutes to an hour and was uneventful.

Approximately 12 to 18 hours later, the effects of the exposure to the vapors began to be apparent. Hazy vision occurred the next morning followed by the onset of mild pain four

hours later. The pain maximized 34 hours after the exposure. The corneal damage was limited to the outer layer, but resulted in temporary blindness and an initial visual acuity of 20/200. Sight was gradually restored over a two-week period. The insidious nature of this chemical is currently not described in the material safety data sheets. The MSDS clearly describes irritation as a result of contact of the chemical with the eyes, but mentions nothing of a delayed effect resulting from exposure to its vapors.

All who contemplate working with this compound class must be aware of the delayed effect that may be encountered. This knowledge will provide time between exposure and its effects for proper first aid measures to be initiated.

Ronald C. Moyer
Tuxedo, N.Y.

Shortage of chemists

Enough already! Your article (C&EN, Aug. 20, page 19) about the imminent shortage of scientists in chemistry, and other hard sciences, rings just as false as the last dozen or so that have appeared, particularly when the accompanying article on the status of the chemical industry is studied. Everyone seems to be in agreement that "we" should be graduating more technical people to stay competitive in the world economy. However, "we" also have to employ all these scientists and engineers—a practical problem that never seems to be addressed.

I have tried to appreciate the factors that will create the coming shortage, but can't. The U.S. is in the midst of a slump in the chemical and aerospace industries. Government funding of academic research and government research facilities is declining now, and is highly likely to shrink in the next 10 years, not grow. If the economy slides into recession, more jobs will be lost, and a big expansion of the technical sector is even more unlikely. Coupled with this, every technical person I know is having a heck of a time either finding a job (hearing of hundreds of applicants for the same position is not uncommon) or is worried about being laid off.

That issue of C&EN also presented some interesting facts: Annual change in

the number of employed R&D scientists has slowed, from 6% per year to 2% per year. Annual change in people employed in industrial chemicals went down 2% from 1988 to 1989 and was an impressive 0% per year for the past 10 years! Does this data extrapolate to an impending shortage?

There are very few ads in C&EN for permanent employment (postdocs and other temporary employment seems to fare slightly better), particularly in industry. I get several unsolicited letters a month from candidates in search of work.

Looking at demographics, it appears that a large number of baby-boom-aged scientists, now mostly graduated and out in the work force, have an average of 25 or so years to go in their careers, so I don't see any immediate surge in openings.

Without being privy to the "now-familiar numbers" that are forcing everyone to come up with creative plans to

Correction

• Sept. 24, page 10: In the table on pesticides affected by Proposition 128, oxadiazon and paradichlorobenzene should have been designated EPA group C carcinogens.

Europe dominates global chemical sales

The U.S. has more large chemical producers than any other nation, but it is Europe that dominates worldwide chemical sales.

These are two of the major findings from C&EN's first ranking of the world's 50 largest chemical producers. The ranking, based on 1989 chemical sales, augments the publication's annual listing of the 100 largest U.S. chemical producers (C&EN, May 7, page 27). For both rankings, chemical sales include most basic and downstream chemical products, but exclude pharmaceuticals.

The \$310 billion total of chemical sales by the 50 largest producers worldwide indicates the huge size of the global chemical industry. In terms of company location, the U.S. has 18 producers on the list. Japan follows with 10, Germany five, France three, and the U.K., Italy, Switzerland, and the Netherlands two each. Belgium, Norway, Finland, and Saudi Arabia each are represented by one company. Two producers are jointly headquartered: the U.K.-Netherlands-based Shell Oil and Unilever.

However, if Europe is taken as a whole, it is the largest chemical-producing area, with 21 producers totaling more than \$167 billion in chemical sales, or 54% of the total sales of the 50 firms. German firms alone reported chemical sales of \$60.7 billion, 36% of the European total and almost 20% of the worldwide total of 50 companies.

The 18 U.S. companies in this ranking account for \$97.8 billion in chemical sales, or 32% of the total. Japan's 10 firms, with an aggregate \$41.3 billion, account for 13% of the total. The only company outside these three areas, Saudi Arabia's Saudi Basic Industries Corp. (SABIC), had chemical sales of \$3.63 billion, or a little more than 1% of the total.

Germany's BASF is ranked as the largest producer, with chemical sales last year of \$17.12 billion. The U.K.'s ICI ran a close second, with \$16.97 billion. Du Pont, the largest U.S. producer, ranked fourth with chemical sales of \$15.25 billion.

Patricia Layman, William Storck

Germany, U.S. each place three companies in top 10 of world's 50 largest chemical producers

Rank 1989		Chemical sales (\$ millions)	Chemical sales as % of total	Chemical operating profits (\$ millions)	Chemical operating profit margin*
1	BASF (Germany)	\$17,122	60.4%	na	na
2	ICI (U.K.)	16,970	78.6	\$1638	9.7%
3	Hoechst (Germany)	16,400	67.2	989	6.0
4	Du Pont (U.S.)	15,249	42.9	2769	18.2
5	Bayer (Germany)	14,810	64.3	1303	8.8
6	Dow Chemical (U.S.)	14,179	80.6	3543	25.0
7	Shell Oil (U.K., Netherlands)	11,921	11.2	1592	13.3
8	Enimont (Italy)	11,186	100.0	539	4.8
9	Exxon (U.S.)	10,559	11.1	1609	15.2
10	Rhône-Poulenc (France)	9,164	80.0	874	9.5
11	Union Carbide (U.S.)	7,962 ^b	91.1	1225	15.4
12	Degussa (Germany)	7,637 ^c	100.0	180	2.4
13	Ciba-Geigy (Switzerland)	7,288	58.0	na	na
14	Solvay (Belgium)	7,055	100.0	742	10.5
15	Asahi Chemical (Japan)	6,377 ^d	100.0	241 ^e	na
16	Elf Aquitaine (France)	6,125	21.6	na	na
17	Monsanto (U.S.)	5,782	56.6	929	16.1
18	British Petroleum (U.K.)	5,743	11.8	885	15.4
19	Akzo (Netherlands)	5,486	62.1	458	8.3
20	Mitsubishi Kasei (Japan)	5,307 ^d	100.0	131 ^e	na
21	Occidental Petroleum (U.S.)	5,203	25.9	1235	23.7
22	Norsk Hydro (Norway)	5,121	53.3	350	6.8
23	General Electric (U.S.)	4,929	9.0	1057	21.4
24	Huels (Germany)	4,787	100.0	364 ^e	na
25	DSM (Netherlands)	4,516	88.9	574	12.7
26	Sumitomo Chemical (Japan)	4,363	100.0	146 ^e	na
27	Amoco (U.S.)	4,272	17.8	744	17.4
28	Takeda Chemical (Japan)	4,262 ^d	100.0	272	na
29	Montedison (Italy)	4,141	100.0	713 ^e	17.2
30	Mobil (U.S.)	4,039	7.3	714	19.2
31	Sekisui Chemical (Japan)	4,018 ^d	100.0	172 ^e	na
32	Toray Industries (Japan)	3,982 ^d	100.0	228 ^e	na
33	Showa Denko (Japan)	3,811	100.0	97 ^e	na
34	Saudi Basic Industries (Saudi Arabia)	3,634	100.0	899 ^e	na
35	Orkem (France)	3,596	100.0	468	13.0
36	Eastman Kodak (U.S.)	3,522	19.1	643	18.3
37	Dainippon Ink & Chemicals (Japan)	3,407 ^d	62.0	62 ^e	na
38	Chevron (U.S.)	3,328	10.4	532	16.0
39	Hoffmann-La Roche (Switzerland)	3,280	54.8	na	na
40	W. R. Grace (U.S.)	3,256	53.2	406	12.5
41	Allied-Signal (U.S.)	2,993	25.1	355	11.9
42	Mitsui Toatsu Chemicals (Japan)	2,977 ^d	100.0	87 ^e	na
43	Unilever (U.K., Netherlands)	2,948	13.2	390	13.2
44	Mitsubishi Petrochemical (Japan)	2,795	100.0	228 ^e	na
45	Arco Chemical (U.S.)	2,663	100.0	580	21.8
46	Rohm & Haas (U.S.)	2,661	100.0	440	16.5
47	Air Products (U.S.)	2,481 ^b	93.9	425	17.1
48	Phillips Petroleum (U.S.)	2,449	19.8	652	26.6
49	Kemira (Finland)	2,253	87.6	na	na
50	American Cyanamid (U.S.)	2,241	46.4	236	10.5

Note: Foreign currencies converted to U.S. dollars using average exchange rates for 1989. * Operating profits as a percentage of sales. b Contains substantial nonchemical sales. c Fiscal year ends Sept. 30. d Fiscal year ends March 31. e Net income. na = not available.

Presidential Young Investigator Awards Program under Review

Prestigious NSF program succeeds at advancing careers of researchers who win, but criticism of selection process may lead to changes

Pamela S. Zurer, C&EN Washington

An assistant professor aiming for the fast track can hardly do better than win one of the National Science Foundation's Presidential Young Investigator (PYI) awards. The guaranteed research funding—a minimum of \$25,000 a year for five years from NSF, with the possibility of up to \$100,000 annually if the PYI successfully hustles matching funds from industry—can fuel a fledgling laboratory.

Just the prestige of capturing the highly competitive honor can jump start a young scientist's career. And the award certificate signed by the President enhances any office wall.

But critics both within NSF and in the academic community are wondering if the PYI program is really the best use of the agency's funds in an era of tight budgets. The process of selecting the winners seems to give an advantage to young investigators with the right pedigree. And once chosen, winners of PYI awards have definite advantages over their equally talented peers who lost out.

"There's no way I would be where I am without a PYI," says Peter G. Schultz, professor of chemistry at the University of California, Berkeley. He won the award in 1985, just as he was setting up his first independent lab as an assistant professor.

"Without the PYI I would have been in very bad financial straits," Schultz says. "My first two propos-

als to major funding agencies weren't funded—they thought my work was just too speculative. The PYI money allowed me to do science that was risky and novel and see whether it would work. The payoff has been incredible."

That payoff includes Schultz's innovative research on catalytic antibodies, which was cited by NSF when in 1988 he won the agency's Alan T. Waterman Award, given annually to an outstanding young scientist in the U.S.

Two other PYIs also have won the Waterman award. Chemist Jacqueline K. Barton, who was one of the first class of PYI awardees in 1984 and is now a professor at California Institute of Technology, won the Waterman in 1985. And Mark E. Davis, professor of chemical engineering at Virginia Polytechnic Institute & State University and a 1985 PYI, earlier this year became the first engineer to win a Waterman.

Those three superstars might well have shot to the top without the boost of a PYI award. But PYIs' careers in general move faster than those of their peers, according to a recent major evaluation of the PYI



program commissioned by NSF. The as-yet-unreleased study, a copy of which was obtained by C&EN, was submitted to NSF by the research firm of Westat Inc. of Rockville, Md., in March. It shows PYIs are more likely to be full professors than either finalists who were nominated for PYIs but didn't make the final cut, or other NSF grantees at a comparable career stage.

Those hard data confirm the opinions of most of the PYIs in the study, who reported that they perceived their careers as progressing faster than their contemporaries. Furthermore, a substantial number of the young academics who were not PYIs commented that they thought PYIs had real advantages, because the PYI funds allowed them to concentrate on research rather than constantly writing proposals.

"I've been clearly at a disadvantage," says one recently tenured young professor who never won a PYI. "I've had to spend infinitely more time hustling money. A PYI award would have made a big dif-

Competition for PYI awards is tough

Fiscal year	Nominations	Awards	Success rate
1984	1549	200	12.9%
1985	1089	200	18.4
1986	886	100	11.3
1987	1122	200	17.8
1988	1806	148	8.2
1989	1657	197	11.9
1990	1591	211	13.3
TOTAL	9700	1256	12.9%

Note: Figures are for all NSF. Budget cutbacks limited the number of awards made in 1986 and 1988. Source: National Science Foundation



PYI award winners Davis (left), Barton (top), and Schultz went on to win the Waterman award

ference early on in terms of allowing me to focus on the lab."

Although the Westat study makes clear that many young investigators have flourished as PYIs, it also demonstrates that the PYI program has failed to meet the goals set for it when it was proposed in 1982 by then Presidential Science Adviser George A. Keyworth II. Alarmed that the brightest young engineers and scientists were deserting academia for better paying industrial jobs, Keyworth sought a way to make academic teaching and research careers more attractive.

But the study shows the PYI program has virtually no effect on attracting and retaining outstanding Ph.D.s in academia. The evaluation found that PYIs are firmly committed to their academic careers—but no more so than the

control groups that did not receive the encouragement of the award.

"I don't think anybody has made a decision to go to academia rather than industry on the basis of the PYI program," says Barton, who a few years ago served on an oversight review panel for the program. "That decision gets made long before."

From the Westat report, it's evident that the PYI program's main effect has been to bolster the careers of the select few lucky enough to win the awards and to enhance the prestige of the universities where the PYIs work—findings likely to reinforce the discontent with the program that exists both within NSF and academia. Much of the criticism centers on the way young researchers are chosen to be PYIs—a process in which who you know and where you went to school seems to play as large a part as what you've accomplished.

Because the program is targeted at assistant professors just beginning their independent careers, the selection process relies heavily on letters of recommendation. Candidates are nominated by their department heads at the schools where they have tenure-track positions. No formal research proposal is required, only a one-page outline of research interests.

"The system seems designed to award certain types of background," says Thatcher W. Root, a PYI who is an assistant professor of chemical engineering at the University of Wisconsin, Madison. "People who made all the right career moves are more likely to win a PYI."

"The selection process is in fact a beauty contest," says Henry A. Mc-

Gee, director of NSF's engineering directorate's chemical and thermal systems division. "It's very clear that approximately half of all PYIs have Ph.D. degrees from a handful—six or seven—of universities. If you have glowing letters of recommendations from persons whose names review panelists would likely recognize, then that's going to work positively in the selection of that particular candidate."

(According to the Westat report, the universities that produced almost half of the first two classes of PYIs are UC Berkeley, Stanford, Caltech, Harvard, Illinois, Massachusetts Institute of Technology, and Princeton. C&EN's own informal analysis finds that a plethora of chemistry PYIs received their Ph.D.s at UC Berkeley, Stanford, Caltech, or Harvard.)

Few critics would argue that the outstanding young scientists and engineers who win PYI awards don't deserve the honor. Rather, they point to the number of equally deserving individuals who feel shut out of an unfair process. NSF's chemistry division, for example, gets about 100 nominations each year but can award only about 15 PYIs.

"There are a tremendous number of talented young people in chemistry," says Paul G. Gassman, professor of chemistry at the University of Minnesota. "But many young investigators view the PYI program as one in which your opportunities are negligible unless you have had or have an association with one of a relatively small number of universities in the U.S." Gassman, who currently is president of the American Chemical Society, stresses his opinions are personal and not an official ACS position.

"I strongly feel that the PYI program is money misspent," Gassman says. He would prefer to see the funds directed toward researchers who have recently received tenure, instead of to beginners who haven't yet established records of independent research and so can be judged only by recommendations.

PYI awards now consume about 4% of chemistry division's budget

Fiscal year	PYI funding, \$ millions	Chemistry division budget, \$ millions	New PYI chemistry awards	Continuing PYI chemistry awards
1984	\$0.4	\$79.3	13	—
1985	1.3	87.6	12	13
1986	1.9	85.8	8	25
1987	2.4	93.8	12	33
1988	2.9	94.0	15	45
1989	3.4	96.7	15	47
1990	3.9	99.7	15	50

Source: National Science Foundation

Criticisms like Gassman's are heard all over the country and at NSF itself. Partly in response to such complaints, in mid-October the agency convened a task force to review the PYI program as well as other NSF activities for young investigators. Mary E. Clutter, assistant director for biological, behavioral, and social sciences, was asked by acting director Frederick M. Bernthal to put the group together.

"We will be looking at just what the impact of the PYI program has been," says Clutter. The task force members will consider earlier reports of PYI oversight committees, composed of visiting scientists, as well as the Westat report. Clutter expects the task force's report, scheduled to be finished by December, will list options and recommendations for the future of the program.

"Some critics say there are too many PYIs," Clutter says. "Is the program still appropriate? Is this what we want to do with the tax-

payers' money? Anytime we enter into an era of tight budgets, anything that takes a big toll of what individual programs can support will be looked at critically."

The money NSF is spending on the PYI program, while not huge, is not insubstantial given the current federal funding squeeze. The agency has spent about \$209 million in the first seven years of the program, according to Terence L. Porter, director of NSF's division of research career development and chairman of an intra-agency steering committee that coordinates the PYI program.

The catch is that PYI funds come out of the same pots of money as do standard NSF investigator-initiated grants. NSF's chemistry division, for example, does not expect to increase its PYI awards above the 15 per year it has awarded for the past several years because the money comes out of the division's general pool of grant funds, according to division director Kenneth G. Hancock. Chemis-

try is now spending about \$4 million a year to support its PYIs—approximately 4% of the division's \$100 million budget.

"We spend about 81% of our budget on single-investigator awards," Hancock says, "and PYI awards are single-investigator awards. That \$4 million for PYIs can't be spent on someone else. It's a trade-off pitting PYIs against other new investigators."

Hancock also points out that the five-year term of PYI awards—one of the most attractive features to those that win them—runs counter to the NSF norm of three years. "If all our grants ran for five years, only 20% of the budget each year would be available for anything new," he says. "In a three-year cycle, we have more flexibility. It's important not to be overcommitted, especially in lean years."

PYI funds take an even bigger chunk—more than 10%—out of the budget of NSF's engineering direc-

Problems.

torate. Engineers receive the lion's share of PYI awards—about 80 of the roughly 200 that have been awarded most years. That situation's historical roots lie in Keyworth's particular concern over a shortfall of engineering educators.

"There's a feeling that perhaps there are too many engineering PYIs," McGee says. "Support for 80 new PYIs a year must come out of the engineering directorate's budget of only \$200 million. Contrast that to chemistry's 15 PYIs a year out of a \$100 million division budget."

Other complaints about the PYI awards involve the way the honor is used—or perhaps abused—at certain universities. Some schools are said to nominate everybody on their staff who is eligible, helping the candidates solicit very strong letters of recommendation.

That strategy makes good sense given the way PYIs are chosen, McGee says. "A chairman needs to nominate all possible candidates,"

he says. "To not do so implies the selection process is superlogical. It's not; it's a beauty contest."

Tenure decisions sometimes hang on whether the candidate is a PYI. One prestigious U.S. chemistry department is said to refuse tenure to its young faculty who have not won PYI awards, as if there were something substandard about them. C&EN was not able to confirm the rumor.

"The phrase we sometimes hear is 'PYI or die,'" McGee says. "To the extent that it happens it's absolutely dreadful, particularly in view of the PYI selection process being so unstructured."

On the other side of the coin, beginning researchers who depended on PYI support to get their research efforts going find that that support is sometimes held against them. University administrators expect to see evidence that young faculty can bring in major federal grant money—and because PYI funds are

awarded without benefit of a research proposal, they may be discounted in tenure decisions.

Such was the case with PYI Robin L. Garrell, an assistant professor of chemistry at the University of Pittsburgh. "The PYI funds allowed me to support a research group," Garrell says. "But in the eyes of the leadership of the department, that money didn't count because it was not from a peer-reviewed grant." Garrell, denied tenure at Pittsburgh, has since won major grants from NIH and NSF.

Garrell also found that obtaining matching PYI research funds from industry was more difficult than she had anticipated. From the outset of the program, one of its main goals was to improve ties between industry and academia. Therefore, NSF will match any industrial funding PYIs can obtain on a dollar-for-dollar basis up to \$37,500 per year.

Across all disciplines, PYIs have succeeded in raising about 75 to 80%

Solutions.



3M

of the maximum \$37,500 available for matching, according to NSF's Porter. Chemists and chemical engineers have done somewhat better than average in obtaining industrial funds, in no small part because of the efforts of the Council for Chemical Research.

CCR is a nonprofit group composed of the heads of university chemistry and chemical engineering departments and leaders of research divisions at companies heavily dependent on chemistry. It was founded in 1979 to promote cooperative activities between universities and industry.

Since the inception of the PYI program, CCR members have provided a significant portion (about 20%) of the industrial funds chemistry PYIs have obtained. The organization itself has actively sought to spread the word about PYIs by distributing information to its members about each new group of awardees. For several years, chemistry and chemical engineering PYIs were invited to present their work at CCR's annual meeting, although that interaction proved to be less useful than hoped.

"We try to stir up interest in the PYI program among our industrial members," says Theodore E. Tabor, manager of cooperative research at Dow Chemical and Dow's alternate representative to CCR. "The PYI program for us is a screening mechanism that allows us to say maybe these are young hotshots we should take a chance on. And the PYIs we fund find our support really helps



Hancock (above) and McGee: research proposals may be required



them because they can get matching funds."

Dow has supported a number of chemistry PYIs at \$37,500 a year for the full five years of the award. In general, however, obtaining industrial research money has not been easy for PYIs, especially in disciplines such as mathematics or astronomy. Indeed, the Westat report found PYIs had no greater contact with industry than their peers by several different measures.

Soon after the program started NSF eased its requirements for matching funds, making monies from nonprofit organizations and the value of gifts of research equipment eligible. For example, Joshua L. Goodman, assistant professor of chemistry at the University of Rochester, has used grants he received

from the Petroleum Research Fund and a discount on a laser purchase to qualify for matching funds during his first year as a PYI. "I'm not sure how easy it will be to get industrial support," he says, indicating he hasn't got much response to his efforts so far.

"I don't think the PYI program turned out to be the golden entry card to industry that NSF thought it would be," says Wisconsin's Root. He has obtained the bulk of his industrial funding from AT&T Bell Labs, where he had a postdoctoral stint before moving to Wisconsin. "Cold calls are very difficult and not likely to be successful. If you have personal contacts you have a much better chance," Root says.

Despite its problems, the PYI program has no lack of supporters. Kendall N. Houk, chemistry professor at UCLA, who recently served two years as director of NSF's chemistry division, thinks the PYI program should be expanded, if anything. "The best part is we identify some terrific people at an early age and give them money to get a good start," he says.

Houk does not view the lack of a research proposal in the PYI selection process as a problem. "There's no doubt the people who are picked are leaders in the field," he says. "Why make them write and rewrite proposals?"

Berkeley's Schultz agrees. "The good the program does far, far outweighs any injustices that might be inherent in the system," he says.

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Goodman (left) and Garrell: matching funds not so easy to come by

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in being able to discuss science policy face-to-face with Congressmen.

CSSP develops action plans and position statements, which are proposed, debated, and voted upon within the two-day meeting. CSSP members and a small permanent staff bring concerns and issues to one of three council standing committees: Government & Public Affairs, Mathematics & Science Education, and Ethics in Science. Proposed resolutions and brief background information subsequently are brought to the full council. A number of approaches are used to ensure the effectiveness of the CSSP position statements: letters to specific, interested individuals; resolutions sent to key groups or organizations; personal approaches by CSSP members to their respective elected representatives and other policymakers; and, by invitation, critical review of and testimony on important pieces of legislation or regulation. Additionally, all of the adopted policies and other activities and business of the council are routinely reported in the quarterly newsletter, *CSSP News*.

When pressing matters emerge between the regular meetings of the full council, they are typically considered by the CSSP executive board, made up of the chairman, chairman-elect, secretary, treasurer, and three members-at-large.

Recent CSSP policy statements have addressed issues such as research funding, science and mathematics education, animal research, National Institutes of Health guidelines for conflicts of interest, and the role of scientific societies in advancing the public understanding of science.

Each year CSSP confers its Award for Support of Science to honor an individual who merits recognition for dedicated support of science, including support of science and mathematics education, support of free scientific communication, support of basic research, and support of public understanding of science.

Periodically, the council engages in special events or activities conducive to the advancement of science and mathematics. A recent example is the May 1990 conference in Racine, Wis., entitled "Bridging the

Communications Gap: A Wing-spread Workshop to Strengthen the Relationships between Scientists and Journalists."

This conference, supported by the Johnson Foundation and the National Science Foundation, brought together 21 senior science journalists and 20 society presidents to reach a better appreciation of the standards, conventions, motivations, and constraints associated with each of the two professions and—based on these understandings—to develop specific methods for facilitating mutually productive interactions between the scientific community and the media with the intended effect of improving the timely flow of scientific information to the public.

In summary, it is apparent that—more than ever before—the Council of Scientific Society Presidents is a useful and valued voice in support

of the broad spectrum of the sciences and mathematics, and their respective professions, in the service of society and the environment. Within this enterprise, chemistry benefits as the overall prospects for science improves, and chemists benefit as the overall prospects for civilization and the environment improve. It is a particular pleasure for me to emphasize and applaud the fact that the American Chemical Society has been a sustaining supporter of CSSP beginning with its creation in 1973. In my opinion, the results have been such that the generous support of ACS and the other supporting societies is amply justified.

For further information on CSSP or for copies of any of the issued policy statements, contact Eric Leber, CSSP Executive Director, at (202) 872-4452. □

Government

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"It's unfortunate the program can't help everybody. Anytime you have to make choices among people, some good people will be left out."

Many PYIs agree that the program's particular strength is the freedom it allows to pursue unconventional ideas. "The program was exceedingly helpful to me because I was not held to a rigorous research plan," says Virginia Tech's Davis, who will be moving next year to Caltech. "We used the funds to explore very high-risk projects that would have been quite difficult to fund through normal channels."

Nevertheless, it's likely that the PYI program will soon be reshaped. A recent NSF report on the agency's peer review process suggested that the PYI program be "mainstreamed." That is, PYI award winners would be picked from the pool of peer-reviewed grant proposals. The other special characteristics of the PYI award, such as the provision for matching funds and Presidential recognition, would remain in place so it would retain its distinction.

"That suggestion would remove the taint that's on the PYI program," Garrell says. "The awards would be

peer reviewed but with some honor added."

That recommendation fits well with thinking going on within the chemistry division at NSF. "In the chemistry division we've begun to explore with our advisory committee and review panels whether we should continue in the same fashion," Hancock says. "Our evolving position is that we might advocate replacing the existing PYI program with something we'd call a 'starter grant.' It would be a sheltered program for young investigators who would write a proposal that would be peer reviewed."

NSF's McGee predicts that a change to requiring research proposals for PYIs will likely be recommended by the task force now reviewing the program. He also thinks the length of the award may be shortened from five years to something less.

"The key word really should be nurturing," McGee says. "I've served on PYI selection panels and all the applicants are outstanding. . . . Nurturing is what we should be providing these young researchers, not Darwinian blood and guts competition." □